

Pneumonia EPICON 2003 Progress Report

COL Robert DeFraites

17 SEP 03

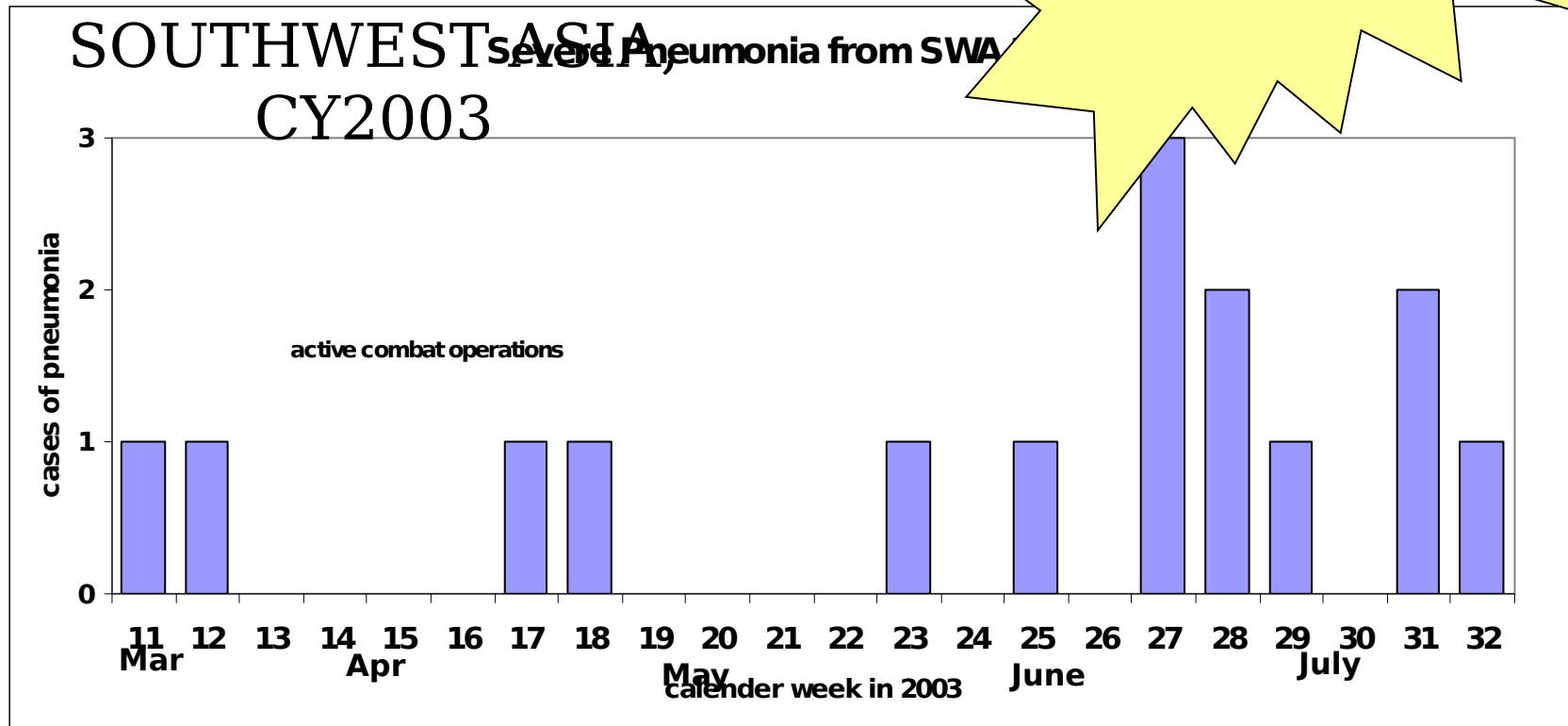
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- Pneumonia in the US and in the Military
- EPICON tasking and deployment
- Clinical and Pathological findings to date
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PNEUMONIA IN OIF/OEF AS OF 11 SEP 03

- Approximately 100 cases of “pneumonia” admitted to Combat Support Hospitals in Iraq and Kuwait since 1 Mar 03
- Nineteen (19) of these have required intubation and assisted ventilation
- Two of the 19 have died.
- Working case definition for “severe pneumonia”: Person deployed to CENTCOM AOR, diagnosed with bilateral pneumonia requiring intubation and ventilator support, since 1 Mar 03.

DATE OF ONSET OF SYMPTOMS IN SEVERE PNEUMONIA CASES IN SOUTHWEST ASIA CY2003



SEVERE PNEUMONIA PATIENTS, SOUTHWEST ASIA N=19

- **Sex**
 - 18 male, one female
- **Age**
 - Range 19-47 years, med 24
- **Service**
 - 17 Army, 1 USMC, 1 USN
- **Service Component**
 - 12 Active, 7 Reserve
- **Rank**
 - 11 Jr Enl, 7 NCO's, 1 Off
- **Duty MOS**
 - Combat arms (8)
 - Engineer (3)
 - Signal (2)
 - Transportation (2)
 - Medical (2)
 - Supply (1)
 - MP (1)
- ***Date of illness onset***
 - March (2)
 - Apr (2)
 - May (1)
 - June (6) (1 fatal)
 - July (4) (1 fatal)
 - Aug (4)
- ***Deployed location***
 - Iraq (13)
 - Kuwait (3)
 - Qatar, Uzbekistan, Djibouti (1 each)

PNEUMONIA HOSPITALIZATIONS (NON-FEDERAL) IN THE UNITED STATES, 2000

Age Group (yrs)	Rate (per 10,000)
<i><15</i>	<i>33.3</i>
<i>15-44</i>	<i>10.5</i>
<i>45-64</i>	<i>35.8</i>
<i>65+</i>	<i>221.2</i>

**Source: Hall MJ, Owings MF. 2000 National hospital
discharge survey. Advance Data from Vital and Health
Statistics 2002, 19 June;329:10**

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COMMUNITY ACQUIRED PNEUMONIA IN THE US

- Most often treated successfully in ambulatory setting with presumptive broad spectrum oral antibiotics
- Etiologic agents includes *S. pneumonia*, *M. catarrhalis*, *L. pneumoniae*, and long list of common viruses in immunocompetent hosts
- Estimate of 50% + with no identifiable etiology

PNEUMONIA IN THE MILITARY

(HOSPITAL DISCHARGE RATE* OF ACTIVE DUTY PERSONNEL WITH DIAGNOSIS OF PNEUMONIA AND INFLUENZA [ICD-9 480-487])

Service	1998	1999	2000	2001	2002	Total
Army	7.10	8.62	7.70	10.69	11.54	9.14
Navy	4.45	4.61	4.00	4.48	3.99	4.31
Air Force	4.22	4.68	6.90	4.85	5.70	5.26
Marines	5.31	7.18	9.46	10.13	19.02	11.23
Total	5.41	6.33	6.72	7.14	7.87	6.72

*PER 10,000 PERSONS

Rates
comparable
to US 15-45
y.o

SOURCE: SIDR, DEFENSE MEDICAL EFFORT REPORTING SYSTEM, BASE, DMSS

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OTHER MILITARY PNEUMONIA OBSERVATIONS

- Gulf War experience: in-theater hospital admission rate (pneumonia and influenza) 8.6 *per 10,000 person-years* (Source: CDR Megan Ryan, NHRC)
- Military admission rate compares favorably with observed ~100 cases in SWA over 6 months (estimated at max 13/10,000).
- Five to eight % of all Army personnel admitted for pneumonia/influenza CY98-02 required mechanical ventilation.
- Fatalities: 17 Army deaths attributed to pneumonia/ARDS over five years (CY98-02).

EPIdemiologic CONsultation

- TSG formally tasked USACHPPM 17 July.
COL Bruno Petruccelli MC, is EPICON leader
- Two teams deployed:
 - EPICON LRMC: 1 Infectious disease physician, 1 epidemiologist deployed 20 July 03
 - EPICON Iraq: 1 Epidemiologist, 1 Infectious Disease physician, 2 laboratory officers, 2 NCOs' deployed to Iraq 6 August 03
- Augmentation: Physician epidemiologist from National Center for Environmental Health, CDC arrived at CHPPM 12 August.

EPICON AUGMENTATION

- Centers for Disease Control
 - Telephonic consultation beginning 1 July 03
 - Dr. Steve Redd joined EPICON Team 12 August
- Armed Forces Epidemiologic Board
 - Weekly teleconferences
- AFIP:
 - Office of Armed Forces Medical Examiner coordinating post-mortem exam on fatal cases.
 - Added formal consultation with Mayo Clinic (Pulmonary pathology)

TYPICAL CLINICAL PRESENTATION

CLINICAL FEATURES

- All febrile (Temp 100.4 to 105° F.)
- No neutropenia (at least 9 with WBC >12K).
- Ten (10) with eosinophilia; peripheral, in lung tissue or BAL*, or both
- Eight (8) with pleural effusions
- Infectious agents implicated in 4 cases (*Streptococcus pneumoniae* in 2, *Coxiella burnettii* and *Acetivobacter baumanii* 1 each).
- 15 of 19 smoked cigars or cigarettes, including all eosinophilic cases; 9 of 10 eosinophilic cases were recent onset smokers
- All cases treated with broad spectrum antibiotics

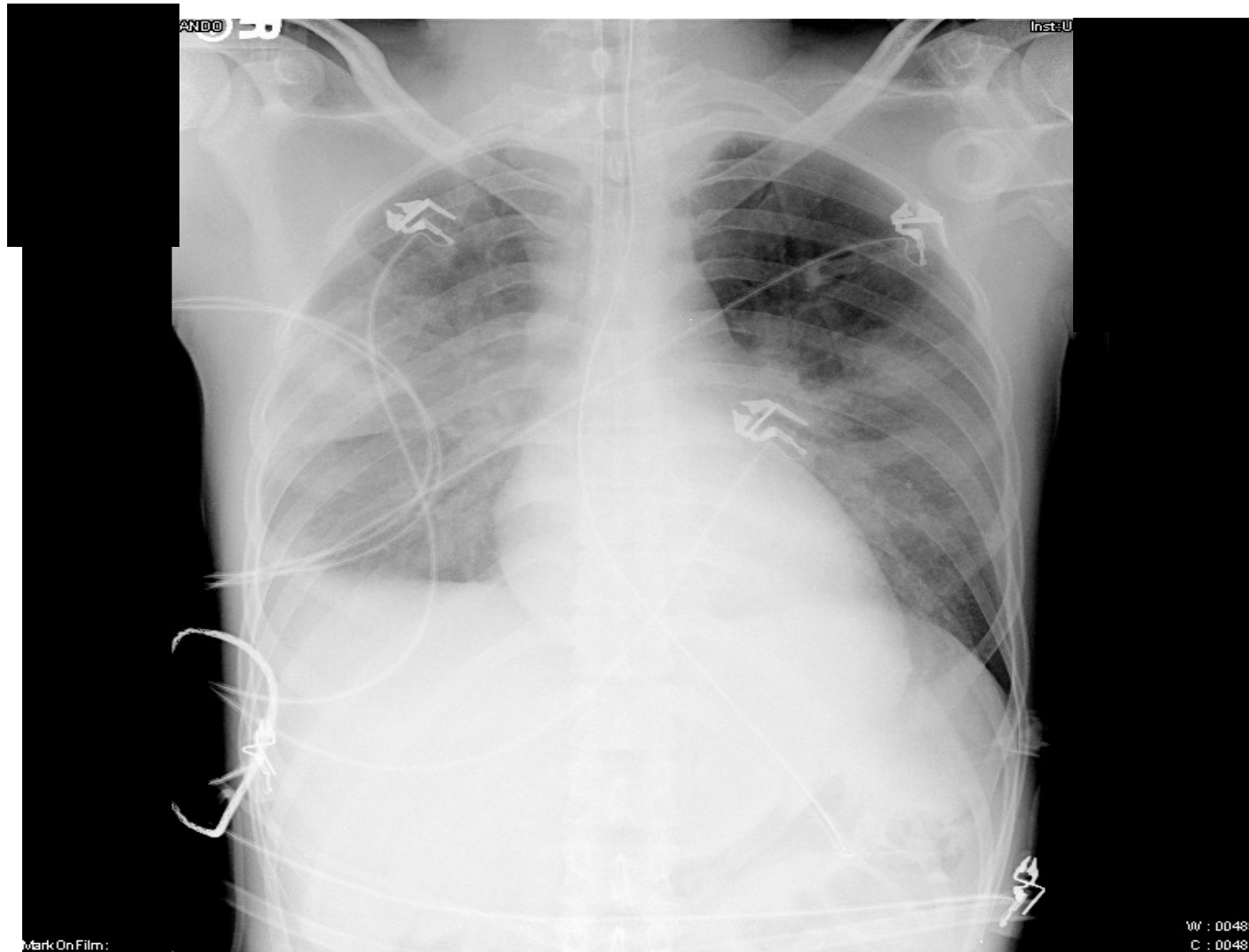
CLINICAL PERTINENT NEGATIVES

- So far, testing incomplete, but negative for:
 - Hantavirus
 - SARS coronavirus
 - Legionella
 - Mycoplasma
 - Adenovirus
 - Influenza
 - TB
 - *Coccidiomyces immitis* (by culture)

SAMPLE CASE HISTORY

- 29 y/o male in the Army National Guard from New Mexico. 88M (truck driver). Currently based at Camp Cedar Iraq.
- He presents with 4 days of fever and fatigue.
- This developed into a non productive cough and SOB
- Admitted, started on antibiotics (levofloxacin).
- Respiratory distress worsens and patient is intubated.

ADMISSION X-RAY



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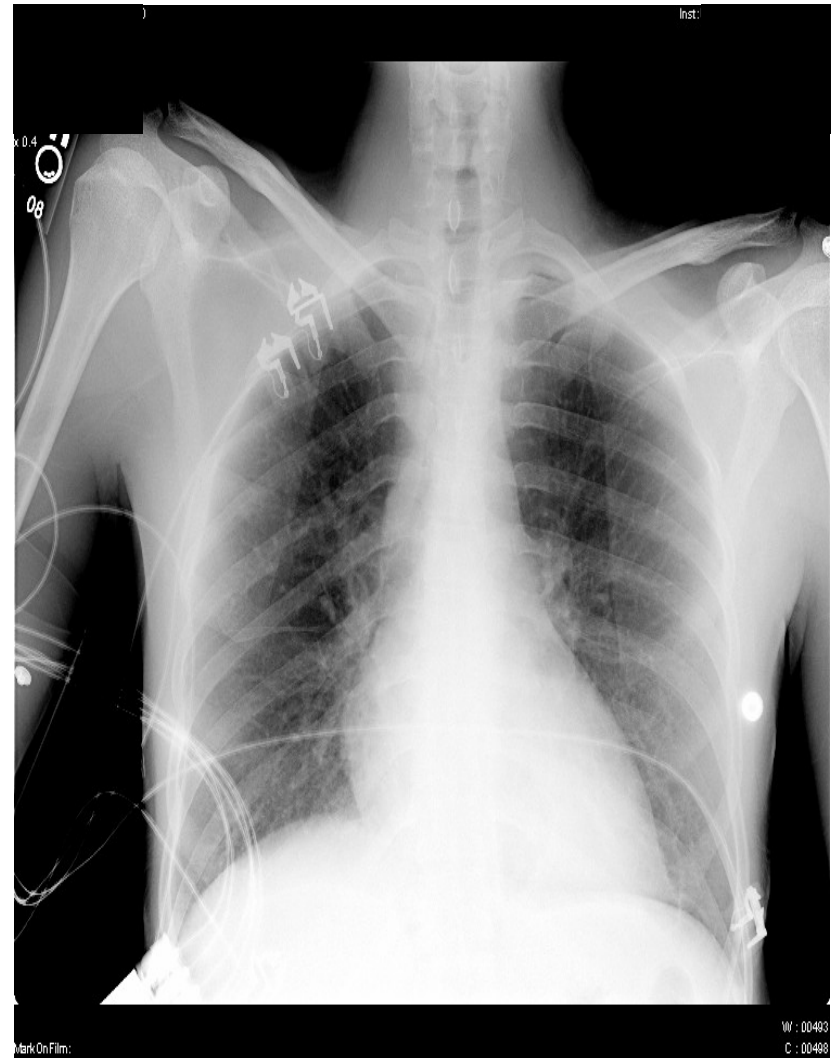
OTHER FINDINGS

- Peripheral Eosinophilia 26.7%. absolute number 2,600 eosinophils per μl^3
- Dips tobacco, but his brand was not available in Iraq and started smoking 2 weeks ago.
- Dust was “very bad”.
- No ill contacts.
- PMH positive PPD before deployment but did not take INH. Negative for Asthma.
- Taking doxycycline for malaria prophylaxis.

CLINICAL COURSE

- Extubated the day after arriving to Landstuhl.
- He was doing well and sent on to Fort Bliss for further care.

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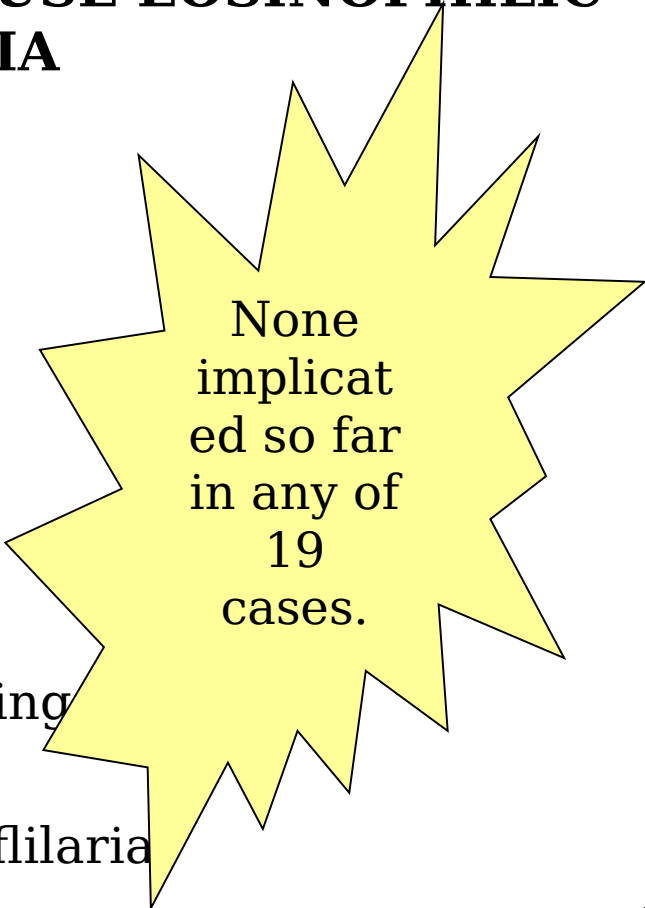
Hospital
Day 3

EOSINOPHILIC PNEUMONIA

- **Eosinophilic Pneumonia is usually diagnosis of exclusion**
 - Acute febrile illness of short duration (<1 week)
 - Hypoxemic respiratory failure
 - Diffuse pulmonary opacities on X ray
 - BAL eosinophilia >25%
 - Lung biopsy showing eosinophilic infiltrates
 - Absence of other known causes of eosinophilia

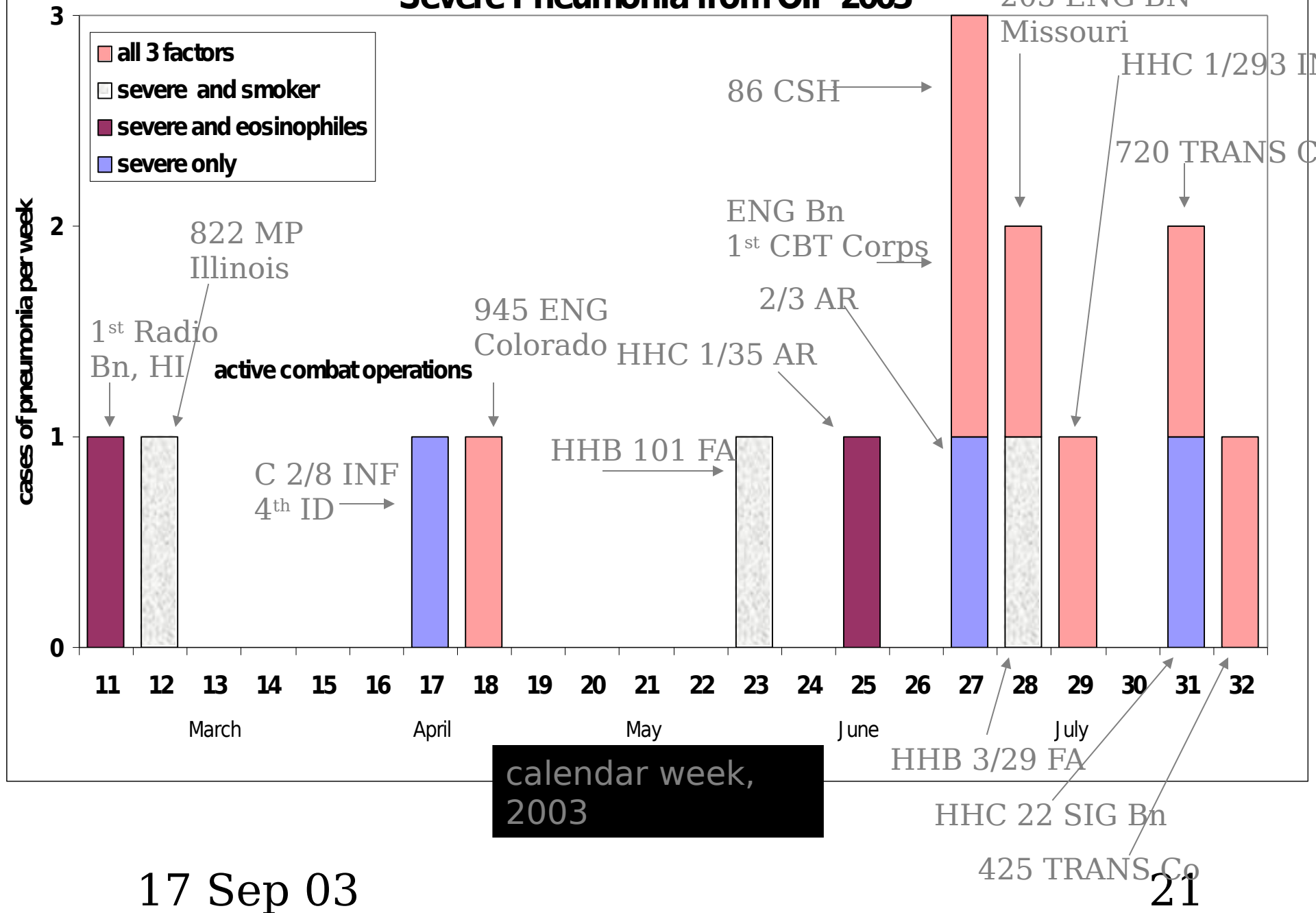
AGENTS IMPLICATED TO CAUSE EOSINOPHILIC PNEUMONIA

- Nitrofurantoin
- Phenytoin
- L-tryptophan
- Ampicillin
- Minocycline
- Acetaminophen
- Inhaled heroin
- Crack cocaine
- Inhalation injury following building
- HIV infection
- Helminth infections (Toxocara, filaria Strongyloides, Acaris)
- Fungal Infections (Trichosporon, Trichoderma, Aspergillus)
- Coxsackie Virus

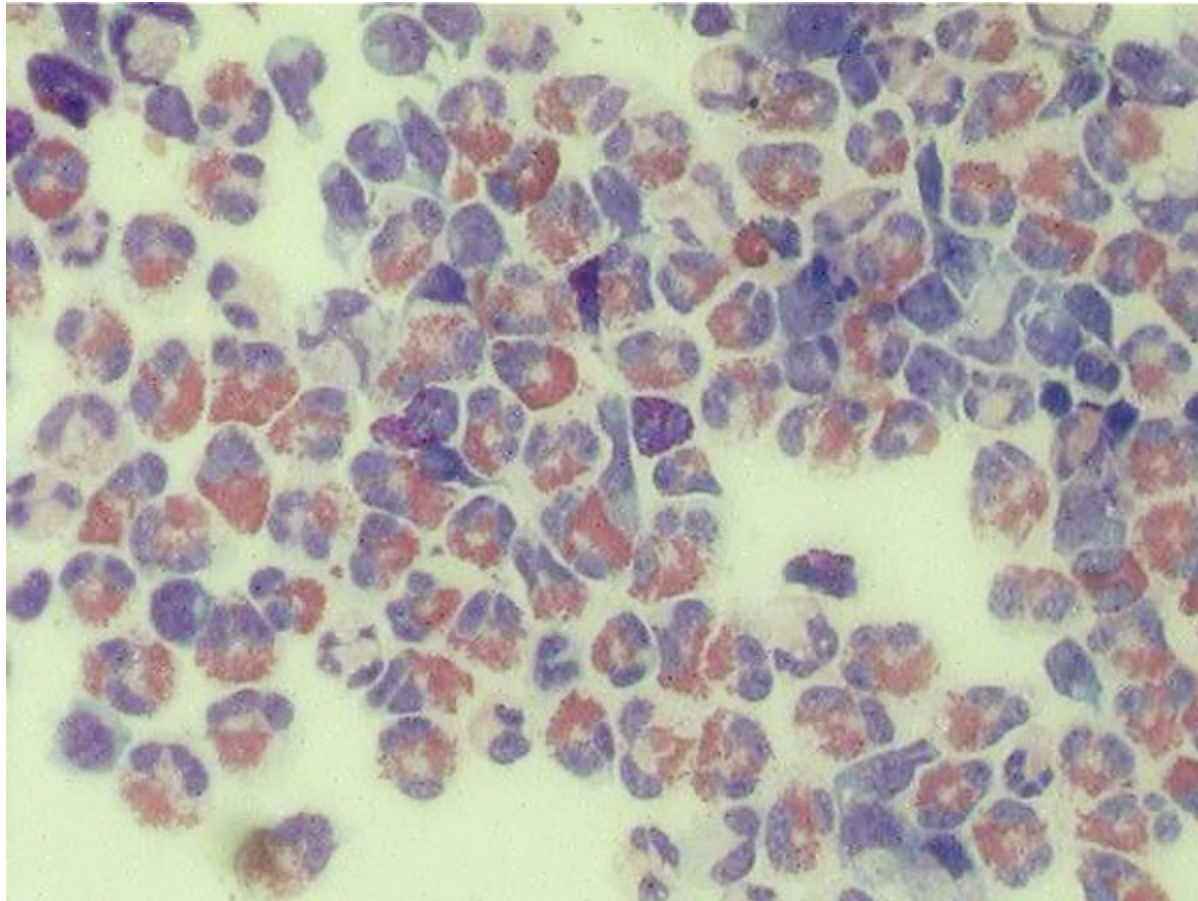


None
implicated
so far
in any of
19
cases.

Severe Pneumonia from OIF 2003



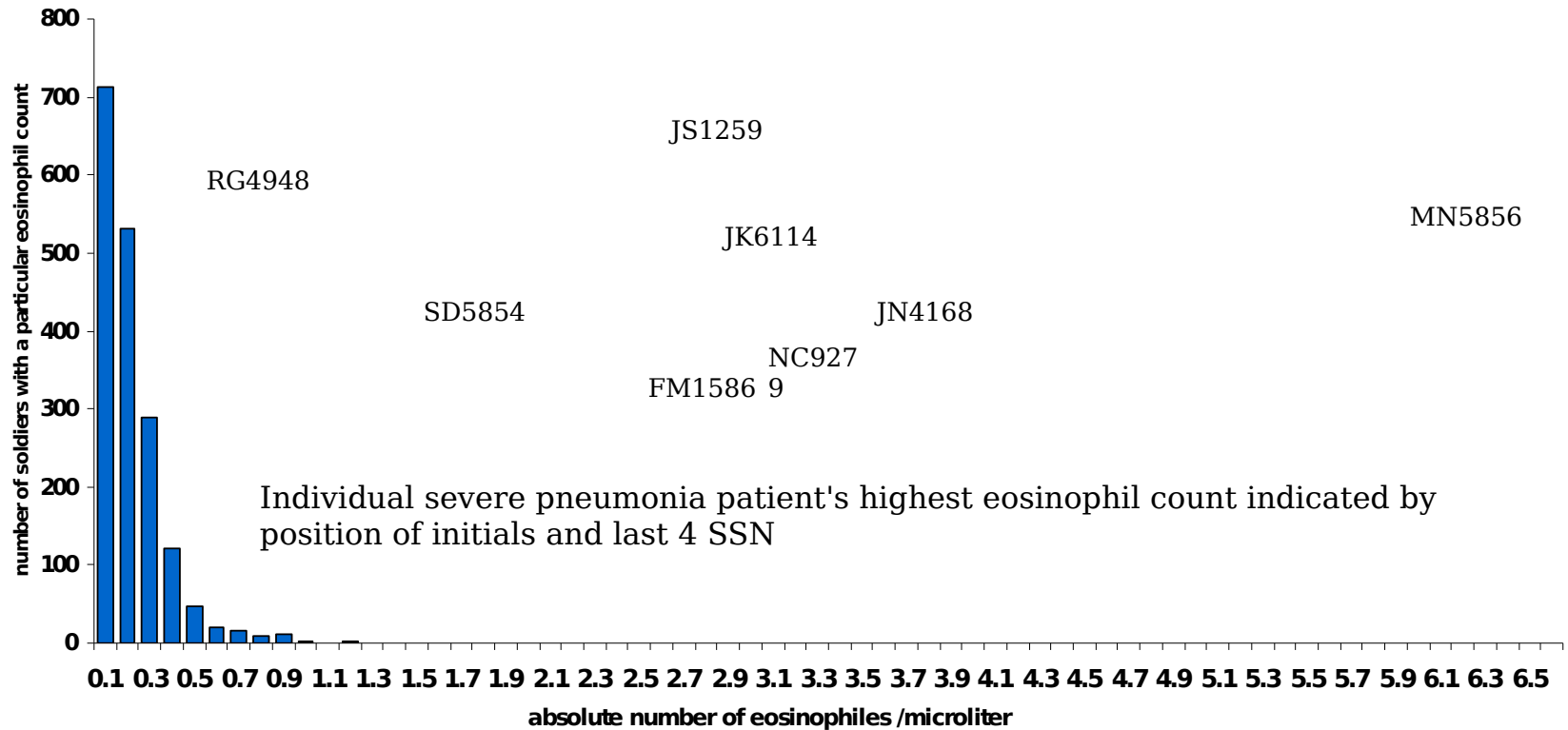
Broncho-Alveolar Lavage (BAL) fluid from patient GT6205* 13Aug03 showing sheets of eosinophils.



*47 y.o. male evacuated from Djibouti in respiratory failure 11Aug.

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Eosinophil counts from all OIF soldiers with blood drawn at LPMC Mar-J ul 2003



CASE REPORTS

2 soldiers who presented with Adult Respiratory Distress Syndrome, peripheral eosinophilia and 10% eosinophilia on BAL.

- Both cases occurred within days of returning from the National Training Center at Fort Irwin, CA in 1997.
- Both cases were smokers.

Giacoppe GN, Degler DA, Rapidly evolving Adult Respiratory Distress Syndrome with eosinophilia of unknown cause in previously healthy active duty soldiers at an Army Training Center: Report of two cases. Mil Med. 1999 Dec; 164(12): 911-6.

EOSINOPHILIC PNEUMONITIS FROM CIGARETTE SMOKING IN THE LITERATURE

- Two cases of eosinophilic pneumonitis (from Japan)
 - Both smoked for less one month
 - Both were less than 30 years of age.

Shiota Y, Kawai T, Matsumoto H, Hiyama J, Tokuda Y, Marukawa M, Ono T, Mashiba H. Acute eosinophilic pneumonia following cigarette smoking. Intern Med. 2000 Oct; 39(10):830-3.

OTHER ACTIONS

- **Prevention message published in theater, emphasizing:**
 - Hydration
 - Smoking cessation
 - Dust protection and indoor dust abatement
 - Appropriate care seeking when symptomatic
 - Other non-vaccine interventions for respiratory disease
- **Communication with families and other stakeholders (Congress/public)**

WAY AHEAD

- **Pursue confirmation of pertinent negative laboratory findings**
- **Pursue additional association of eosinophilic pneumonia with desert or deployment environment**
- **Pursue association of eosinophilic pneumonia with cigarette smoking and other exposures (Case-control study)**